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21845 Hermosa Ave.
Cupertino, CA 95014

EXAMINER

MULLINS, BURTON S

ART UNIT PAPER NUMBER

2834

DATE MAILED: 04/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,456

Applicant(s)

YEH, SHOW-WAY

Examiner

Burton S. Mullins

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Claim 12 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the response filed 26 November 2002.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "stator means is a magnet rod and each said mover is a coil" (claims 8 and 11) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

The "Previous Arts" section does not discuss the relevancy of the listed patents. Such a list is appropriate for an information disclosure statement (form PTO-892), not the specification. The examiner further reminds applicant that the listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and

MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

The term "elemental motor" used throughout the disclosure is not clear. What distinguishes an "elemental" motor from a motor?

On p.5, lines 15+, recitation "coil 10X" presumably refers to the coils 10A-10H, but it is not entirely clear if this means only one of the coils 10A-10H or any number of the coils. For example, is current applied only to coil 10A, or can current be applied to coils 10A, 10B and 10C? Recitation "coil 10X" should include some statement clarifying this. The same problem applies to "rod 20X", "coupling device 30X" and "moveable joint 40X". A solution would be to replace "10X" with "10A, 10B, 10C,...10H" and so forth with "20X", "30X" and "40X".

On p.6, lines 12 and 20 and p.7, lines 13 and 18, it is not understood what the "fans" of the position detector are.

Recitation "To make very thin motor, the linear motors are made as thin as possible" (p.6, last line to p.7, line 1) makes no sense.

On p.7, line 4, "scarifies" makes no sense. Does applicant mean ---sacrifices--?

On p.9, line 3, change "Coupling" to ---Coupled---. On line 7, change "Comparing" to ---Compared---.

Appropriate correction is required.

Claim Objections

4. Claims 1-11 are objected to because of the following informalities: Remove the "•" from each claim. In claims 1 and 11 recitation "installing" implies method steps. However, the claims are directed to an apparatus. Therefore, the examiner suggests applicant delete the verb "installing" in claims 1 and 11. In claim 2, line 5, insert --and-- before "said actuator moves". In claim 3, line 5, insert --and-- before "said actuator moves". In claim 4, line 4, insert --an-- before "electromagnetic field". On line 6, insert --and-- before "said actuator moves". In claim 5, line 7, insert --and-- before "said actuator moves". In claim 6, line 2, change "a pair of a stator means" to ---a pair of stator means---. On line 4, change "actor" to ---stator---. On line 7, insert --and-- before "said actuator moves". In claims 7-11, insert --and-- before "said actuator moves". In claim 12, line 3, insert --a-- before "plunger". On line 7, insert ---a-- before "desired amount". Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, it is not disclosed in the specification how to make the claimed "thin motor". The figures show "conceptual" structures of various "elemental" thin motors. It is

not clear if applicant means by this etched, micro-mechanical motors. Does applicant miniaturize known electric motors? How are the corresponding miniature transferring means made? Further, it is not clear how the subject matter of claims 8 and 11, with the stator comprising a magnet rod and the "mover" comprising a coil would be made and operated, since it is not clear how the moving coils would be powered, especially if they are micro-machined. How and by what means are these moving micro-coils energized? The specification merely says: "Alternatives include that each magnet rod 20X is fixed and the coil 10X is moveable..." (p.7, lines 19-20) No art has been applied to these claims pending clarification and/or amendment.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-3 recitation "elemental movement generator" is vague. While applicant can be his own lexicographer, the terms should not be repugnant to their normal meaning. In any case, it is not clear what an "elemental movement" generator is and how it distinguishes over a movement generator. Does this refer to a device (a generator) for moving an element?

In claims 1-11, the syntax of recitations "said actuator moves and stops at desired moments of time and in the desired direction" is improper and renders the claims indefinite.

How can an actuator "stop...in the desired direction"? Should this be ---said actuator moves in the desired direction and stops at desired moments of time---? Further, the recitations in claims 2-11 are redundant in light of claim 1 recitation "said actuator moves and stops at desired moments of time and in the desired direction".

In claims 3-11, recitations "and stop/s doing it" are vague and indefinite.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-2, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Dhuler (US 5,955,817). Dhuler teaches a thin motor including: movement generator means comprising plural arched-beam, linear motor MEMS actuators 144/146 (Fig.15) on a substrate surface 32 (Fig.1); actuator means 162/166; transferring means comprising rods 148 connecting the MEMS to the actuator means; controller means comprising heaters 38 controlling movement of the arched beam MEMS or movement generators such that each moves and stops at desired positions (c.6, lines 8-10). Alternatively, current applied to

the beams is controlled inherently by a controller, thereby providing fine motion control (c.9, lines 24-33).

11. Claims 1 and 3, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Bieg (US 6,463,664). Bieg teaches plural "elemental movement generators" comprising "drivers" such as rotating geared motors 32-25 (Fig.11) which may comprise MEMS technology (c.6, lines 33-36) installed on a surface 19; an actuator means or moveable platform 18; force transferring means comprising disks 12-15 which compel smooth linear motion of the platform (abstract); with control means (inherent, c.2, lines 6-8) which electronically synchronize the motors to move and stop the platform as desired.

12. Claims 1-2 and 6, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Dickey et al. (US 5,990,473). Dickey teaches plural "elemental movement generators" comprising MEMS linear motors 104 (Fig.3) installed on a surface 102; an actuator means comprising rack 16; force transferring means comprising gear 106 and linkage 108 which move the rack 116; with control means (inherent) for controlling reciprocating motion of the motors.

13. Claims 1, 2, 5-7 and 9, as best understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Teal (US 4,093,880). Teal teaches plural "elemental movement generators" comprising micro linear actuators (electro-magnet coils 18 and solenoid armatures 28 therein, c.2, lines 44-63) installed on a surface 12 (Fig.1); an actuator means or rod crank 25; force transferring means comprising disc 35 and connecting rods 38 which transform electrical input into mechanical output (c.3, lines 15+) using timing mechanism 50 to operate the electro-magnets. Solid state switching of the electro-magnets is taught in Fig.8, c.3, lines

60-65, so that the solenoids are pushed and pulled. Regarding claim 6, the pairs of stators are disclosed by Teal's multiple coils 18, with mover means comprising solenoid armatures 28. Regarding claim 7, the solenoid armatures inherently comprise coils with magnetic cores. Regarding claim 9, the solenoid armature coils move, while the stator coils 18 are fixed.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dickey as applied to claims 2 and 6 above, further in view of Ghosh et al. (US 6,171,886). Dickey does not teach details of his MEMS linear actuators.

Ghosh teaches MEMS linear actuators including a coil 54a/54b and permanent magnet rod 40. The coils produce a magnetic field which causes reciprocating motion of the rod (abstract).

It would have been obvious to use Ghosh's linear actuator structure in Dickey's apparatus since such MEMS would have been desirable for reciprocating motion.

Regarding claim 10, iron is a well-known permanent magnetic material suitable for use in Ghosh's rod 40.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Gifford teaches an electromagnetic engine comprising: movement generator means comprising electromagnets 24/26 and pistons 12 on a surface (the engine block 16); an actuator means comprising a crankshaft 18; transferring means comprising rods 20 connecting the electromagnetically driven pistons to the crankshaft; controller means comprising computer 42 (Fig.5) controlling movement of the movement generators by controlling energization of the various electromagnets (c.5, line 49-c.6, line 34; c.7, lines 14-28). Gluckel teaches micromechanical fluid flow actuators.

17. An examination of this application and claims reveals that applicant is unfamiliar with patent prosecution procedure. While an inventor may prosecute the application, lack of skill in this field usually acts as a liability in affording the maximum protection for the invention disclosed. Applicant is advised to secure the services of a registered patent attorney or agent to prosecute the application, since the value of a patent is largely dependent upon skilled preparation and prosecution. The Office cannot aid in selecting an attorney or agent.

Applicant is advised of the availability of the publication "Attorneys and Agents Registered to Practice Before the U.S. Patent and Trademark Office." This publication is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the

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examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
April 3, 2003